

REMARKS

In summary, claims 1-48 are pending. Claims 1-19 and 32-48 are rejected under 35 U.S.C. §101. Claims 1-48 are rejected under 35 U.S.C. §102. The specification is amended to correct typographical errors. Claims 7, 17, 25, and 28 are canceled. Claims 1, 11, 20, 27, 32, and 40 are amended. No new matter is added.

Amendments

The specification is amended to correct typographical errors. Paragraph [0001] is amended to remove the word “is.” In paragraph [0028], line 15, the number “225” is replaced with the number “226.” In paragraph [0030], line 6, the stand alone letter “t” is replaced with the word “to.”

Independent claims 1, 11, 20, 27, 32 and 40 are amended to recite: “wherein said relationships are not subject to restrictions placed on said database.” Claims 7, 17, 25, and 28 are consequently canceled.

Claim Rejections - 35 U.S.C. §101

Claims 1-19 and 32-48 are rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. It is asserted in the instant Office Action that because claims 1-10 are directed to “[a] method” they are not tangibly embodied in a manner so as to be executable and are non-statutory as being an abstract idea. This assertion, in essence, stands for the proposition that method claims *per se* are non-statutory subject matter.

Method claims are not *per se* non-statutory subject matter. 35 U.S.C. §101 recites in part: “[w]hoever invents or discovers any new and useful process ... may obtain a patent therefor ...” (Emphasis Added). And 35 U.S.C. §100(b) defines the term process to mean method: “The term ‘process’ means process, art or method ...” Thus, method claims are not *per se* non-statutory subject matter.

Claims 11-19 and 32-48 are rejected under 35 U.S.C. §101 because, as asserted in the instant Office Action, “A computer-readable medium” as recited in the claims does not

render the claims tangibly embodied because a computer-readable medium can include a carrier wave.

Applicant submits that the test to determine if subject matter is statutory under 35 U.S.C. §101 is not merely whether the subject matter is tangibly embodied, but includes whether the claimed invention as a whole produces a useful, concrete and tangible result. Further, “Office personnel have the burden to establish a *prima facie* case that the claimed invention as a whole is directed to solely an abstract idea or to manipulation of abstract ideas or does not produce a useful result. Only when the claim is devoid of any limitation to a practical application in the technological arts should it be rejected under 35 U.S.C. 101.” *Manual of Patent Examining Procedure* § 2106, Ed. 8, Rev. 2 (May, 2004). (Emphasis Added). Claims 1-19 and 32-48 are not devoid of a limitation to a practical application. Claims 1-19 and 32-48 are directed to improved data processing in connection with a database. Improved data processing in connection with a database can result in quicker response times and more efficient queries. These results are useful, concrete, tangible, and a practical application in the technological arts.

To better understand the qualification of subject matter under 35 U.S.C. § 101, a brief development of the law is provided below.

35 U.S.C. § 101 reads:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The Supreme Court has construed § 101 broadly, noting that Congress intended statutory subject matter to “include anything under the sun that is made by man.” *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (quoting S. Rep. No. 82-1979, at 5 (1952); H.R. Rep. No. 82-1923, at 6 (1952)).

Despite the apparently infinitely broad sweep of 35 U.S.C. § 101, the Supreme Court has held that certain categories of subject matter are not entitled to patent protection. In *Diamond v. Diehr*, 450 U.S. 175, 185 (1981), the Supreme Court explained that there are

three categories of subject matter for which one may not obtain patent protection, namely “laws of nature, natural phenomena, and abstract ideas.”

The Supreme Court has also held that certain mathematical subject matter is not, standing alone, entitled to patent protection. *Diehr*, 450 U.S. 175 (1981); *Parker v. Flook*, 437 U.S. 584 (1978); *Gottschalk v. Benson*, 409 U.S. 63, n.19 (1972). In *Diehr*, the Court explained that certain types of mathematical subject matter, standing alone, represent nothing more than abstract ideas until reduced to some type of practical application, *i.e.*, “a useful, concrete and tangible result.” *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994).

A close analysis of *Diehr*, *Flook*, and *Benson* reveals that the Supreme Court never intended to create an overly broad, fourth category of subject matter excluded from § 101. Rather, at the core of the Court's analysis in each of these cases lies an attempt by the Court to explain a rather straightforward concept, namely, that certain types of mathematical subject matter, standing alone, represent nothing more than abstract ideas until reduced to some type of practical application, and thus that subject matter is not, in and of itself, entitled to patent protection. *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994).

Because § 101 includes processes as a category of patentable subject matter, the judicially-defined proscription against patenting of a “mathematical algorithm,” to the extent such a proscription still exists, is *narrowly limited* to mathematical algorithms in the abstract. *State Street v. Signature Fin. Group Inc.*, 149 F.3d 1368, 1374-75 (Fed. Cir. 1998) (emphasis added).

The *Alappat* inquiry simply requires an examination of the contested claims to see if the claimed subject matter as a whole is a disembodied mathematical concept representing nothing more than a “law of nature” or an “abstract idea,” or if the mathematical concept has been reduced to some practical application rendering it “useful.” *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994). The claimed invention as a whole must accomplish a practical application. That is, it must produce a “useful, concrete and tangible result.” *State Street*, 149 F.3d 1368 at 1373.

To distinguish an abstract concept (*i.e.*, a pure mathematical algorithm) from a statutory subject matter, courts often determine if the claim would wholly preempt others from using the algorithm. For example, in *In re Iwahashi*, 888 F.2d 1370, 1375 (Fed. Cir. 1989), the court stated that the fact that four claimed means elements function to transform one set of data to another through what may be viewed as a series of mathematical calculations does not alone justify a holding that the claim as a whole is directed to nonstatutory subject matter. However, in *Gottschalk v. Benson*, 409 U.S. 63, 68-72 (1972), the Court noted that the claims for converting binary coded decimal numbers to pure binary numbers, as written, were “so abstract and sweeping” that they would “wholly pre-empt” the use of the mathematical formula.

The Supreme Court has supported and enhanced this effort. In *Diehr*, the Court explicitly distinguished Diehr's process by pointing out that “the respondents here do not seek to patent a mathematical formula. Instead, they seek patent protection for a process of curing synthetic rubber.” *Diehr*, 450 U.S. at 187. The Court then explained that although the process used a well-known mathematical equation, the applicants did not “pre-empt the use of that equation.” *Id.* Thus, even though a mathematical algorithm is not patentable in isolation, a process that applies an equation to a new and useful end “is at the very least not barred at the threshold by § 101.” *Id.* at 188.

A numerical result (*i.e.*, a numerical result representing information) may be a useful, concrete, and tangible result. It is important to note that whether the product of the claimed process is numerical is not a criterion of whether the claim is directed to statutory subject matter. *Arrhythmia Research Tech. Inc. v. Corazonix Corp.*, 958 F.2d 1053, 1060 (Fed. Cir. 1992).

In *AT&T Corp. v. Excel Communications Inc.*, 172 F.3d 1352, 1358 (Fed. Cir. 1999), a primary interexchange carrier (PIC) indicator value was derived using a simple mathematical (Boolean) principle. The PIC indicator *represented* information about the call recipient's PIC, a useful, non-abstract result that facilitates differential billing of long-distance calls made by an interexchange subscriber. *Id.* (emphasis added) The court noted that because the claimed process applies the Boolean principle to produce a useful, concrete,

tangible result without pre-empting other uses of the mathematical principle, on its face the claimed process comfortably falls within the scope of § 101. *Id.*

Diehr also demands that the focus in any statutory subject matter analysis be on the claim as a whole. Indeed, the Supreme Court stated in *Diehr*: When a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect, then the claim satisfies the requirements of § 101. *Diehr*, 450 U.S. at 187.

A “process” no longer requires a physical transformation of something to a different state or thing: transformation of data is sufficient if it produces “a useful, concrete and tangible result.” This reasoning appears intended to be *broadly construed*. *Ex parte Donner*, 53 USPQ2d at 1702 (Board of Patent Appeals and Interferences, 1999) (emphasis added). A “physical transformation” is not an invariable requirement, but merely one example of how a mathematical algorithm may bring about a useful application. *AT&T Corp.*, 172 F.3d at 1358.

As a specific example, in *State Street*, the court held that the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces “a useful, concrete and tangible result”-- a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades. *State Street*, 149 F.3d at 1375.

Office personnel have the burden to establish a prima facie case that the claimed invention as a whole is directed to solely an abstract idea or to manipulation of abstract ideas or does not produce a useful result. Only when the claim is devoid of any limitation to a practical application in the technological arts should it be rejected under 35 U.S.C. § 101. *Manual of Patent Examining Procedure* § 2106, Ed. 8, Rev. 2 (May. 2004).

Because claims 1-19 and 32-48 are directed to improved data processing in connection with a database, which is a practical application in the technological arts and provides useful, concrete, and tangible results, Applicant respectfully requests that the rejection of claims 1-19 and 32-48 under 35 U.S.C. § 101 be reconsidered and withdrawn.

Claim Rejections - 35 U.S.C. §102

Claims 1-48 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Application Publication No. 2004/0122844, in the name of Malloy *et al.* (hereinafter referred to as “Malloy *et al.*”).

Malloy *et al.* neither discloses nor suggests that relationships between attributes of a dimension are not subject to restrictions placed on the database, in accordance with independent claims 1, 11, 20, 27, 32, and 40.

Malloy *et al.* teaches the use of “metadata to create multidimensional cubes in a relational database.” (Page 1, Paragraph [0002]). Malloy *et al.* also teaches “creating and describing views in a relational database such that the resulting views behave similarly to multidimensional databases.” (Page 2, Paragraph [0023]). Malloy *et al.* does not teach that relationships between attributes of a dimension are not subject to restrictions placed on the database.

In the instant Office Action, it is asserted that Malloy *et al.*, at Page 8, Paragraph [0111], teaches that “the relationships between the attributes are defined independent of restrictions associated with the database.” This assertion is supported by the statement that “an attribute order of a hierarchy can be varied, thus the attribute order can be arbitrarily defined.”

Applicant submits that the ability to vary the order of attributes of a hierarchy does not imply or teach that the that relationships between attributes of a dimension are not subject to restrictions placed on the database. The order of attributes can be variable and still be bound by restrictions placed on the database. Moreover, the cited passage (Page 8, Paragraph

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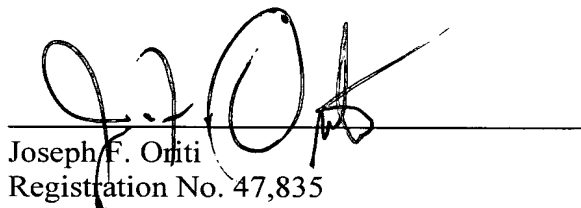
[0111]), along with the remainder of Malloy *et al.* is silent as to restrictions placed on the database.

Because Malloy *et al.* neither discloses nor suggests that relationships between attributes of a dimension are not subject to restrictions placed on the database, Applicant respectfully requests that the rejection of claims 1-48 under 35 U.S.C. § 102 be reconsidered and withdrawn.

CONCLUSION

It is requested that the forgoing arguments, remarks, and amendments be entered, and in view thereof, it is respectfully submitted that this application is in condition for allowance. Reconsideration of this application and an early Notice of Allowance are respectfully requested. In the event that the Examiner cannot allow this application for any reason, the Examiner is encouraged to contact the undersigned attorney to discuss resolution of any remaining issues.

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